DOCUMENT RESUME

ED 473 469 RC 023 890

AUTHOR	Lloyd, Margaret; Cronin, Rebecca
TITLE	A Community of Teachers: Using Activity Theory to Investigate the Implementation of ICTE in a Remote Indigenous School.
PUB DATE	2002-02-00
NOTE	27p.; Paper presented at the Annual Conference of the Australian Association for Research in Education (Brisbane, Queensland, Australia, December 1-5, 2002).
AVAILABLE FROM	For full text: http://www.aare.edu.au/02pap/llo02042.htm.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	*Aboriginal Australians; Boarding Schools; Computer Mediated Communication; *Educational Change; Elementary Secondary Education; Foreign Countries; Internet; *Rural Schools; *School Community Relationship; Systems Approach; Teacher Attitudes; *Technology Integration; *Technology Uses in Education
IDENTIFIERS	Australia (Queensland)

ABSTRACT

Since 1999, most secondary students from the Indigenous community of Lockhart River in far north Queensland (Australia) have attended boarding schools in other places. In 2001-02, a project in Lockhart River called Reach In-Reach Out initiated classroom and community activities using information and communication technology (ICT). Activities involved Internet-based communication between externally-based students and their families and community, and the integration of community and cultural projects into the elementary school curriculum. A study investigating the project's impact focused on the teachers of Lockhart River State School and the changes made to their practices. Data collected via interviews and observation were analyzed using an Activity Systems Theory framework. The components of an activity system are subject, rules, instruments, community, division of labor, and object. Analysis of the various interactions among system components revealed a commitment to students above all; a strong sense of collegiality supporting the ICT innovation; and a willingness to adapt the project to meet specific needs of teachers, students, and parents. The "Travel Buddies" project, which typically involves exchanges of toys or puppets between schools plus related literacy activities, was adapted to the Lockhart context in several ways: whole-school approach, use of buddies to smooth student transition to boarding school, use of web publishing for inter-school communication, emphasis on literacy and numeracy, and use of buddies as a link to the community. (Contains 33 references.) (SV)

Reproductions supplied by EDRS are the best that can be made
from the original document.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
Margaret Lloyd
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

AARE 2002

A community of teachers: Using Activity Theory to investigate the implementation of ICTE in a remote Indigenous school

ED 473 469

Margaret Lloyd
mm.lloyd@qut.edu.au
School of Maths, Science and Technology Education
Faculty of Education
QUT

Rebecca Cronin
Bec.cronin@bigpond.com.au
School of Maths, Science and Technology Education
Faculty of Education
QUT

Abstract:
In 2001-2002, an innovative project entitled *Reach In-Reach Out* has been conducted in Far North Queensland. Its aim was to use telecommunications and Internet tools to facilitate communication between the children of Lockhart River who attend secondary school in such centres as Cairns, Townsville and Herberton and their families. This study was the first (of three) to investigate the impact of this project. Its focus is on the teachers of Lockhart River State School and the changes made to their practice by the implementation of the project.

The study described in this paper was conducted in Lockhart River which is situated on Kanthanumpu (Southern Kuuku Ya'u) land in Far North Queensland. The current population is estimated between 650 (Education Queensland, 2001a) and 800 (Lockhart River Land and Sea Management Agency, 2001) residents. The student population of Lockhart River State School in 2001was 26 (Kindy), 105 (Primary) and 30 (Alternate secondary/VET) programs) (Education Queensland, 2001a). At the end of 1999, the secondary school of Lockhart River was closed following a community decision to do so. This necessitated the majority of post-primary students having to leave Lockhart River to continue their education at boarding school. At the beginning of 2002, 38 students left the Lockhart River Community to attend boarding schools (and 8 remained to take part in the Alternate Secondary/VET program offered at the school). Table 1 details the secondary enrolments of Lockhart River students from 1998 to 2001, including the period covered by this study (2001).

RE023890

BEST COPY AVAILABLE

Table 1

Secondary Enrolments of Lockhart River students

	1998	1999	2000	2001
Alternate Secondary [1]	43	34	7	30[2]
Boarding School[3]	3	14	36	36

Notes to Table:

1. Secondary program at the school campus (Lockhart River)
2. Restructured post-primary/VET course offered at the school campus
3. Boarding schools are in various centres including Herberton, Brisbane, Cairns, Townsville, Yeppoon, Abergowrie and Weipa.

The study described in this paper reviewed teacher actions and interactions in the *Reach In – Reach Out* Project from the perspective of the teachers within the school. The study was funded by the RITE Group (Research in Information Technology Education) within the School of Maths, Science and Technology Education, QUT, Brisbane and the presented paper is a summary of the full report of that study. *Reach In - Reach Out* is a set of community and classroom activities using information and communications technology (ICT). Its activities fall into two main categories. These are (i) communication using the Internet, between externally located Lockhart River students with their families, friends and community (referred to as *Family Connections*); and, (ii) the integration of community and cultural projects and activities into the school curriculum. Corollary aims of the study were (i) to document and describe the adoption and adaptation of RITE online curriculum projects in a remote Indigenous community; and (ii) to test Activity Systems Theory as the means to analyse data in ICT-rich environments.

The following will describe the research methods and design of the study (Section 1), responses to the research foci (Sections 2 & 3), and the conclusions of the study (Section 4).

1. Research Methods and Design

The specificity of the location of the study and the interdependence of its components (concerned with ICT, educational change, and Indigenous contexts), the preferred methodology was that of the case study. Quantifiable analyses would yield few productive conclusions in the analysis of individual perspectives on the *Reach In - Reach Out* Project. It treated the school as an activity system (Engestrom, 1987) and mapped the interactions between people, technology, pedagogy and environment. Its findings were drawn from on-site visits, focussed interviews, a scan of current policies and strategies affecting Indigenous education in Queensland, and a study of the literature within the domains of technology implementation (and school restructuring) and teacher collegiality. The study had two discrete research foci, which were:

1. The interactions occur within a school when ICT practices change (see Section 2); and,
2. The adaptations to online curriculum projects to meet specific teaching and learning goals in Indigenous education (see Section 3)

1.1 Subjects

The subjects of this study were the Principal, the Project Director, the ICT Co-Ordinator, and the teachers of Lockhart River State School (N=9). Of these, four subjects were teachers with direct daily experience of the curriculum implementation of the *Reach In - Reach Out* project. These teachers will be referred to in the following sections of this report as T1, T2, T3 and T4 respectively. Another two teachers interviewed had peripheral association with the project and will be referred to as t5 and t6 to indicate this moderated involvement. The lower case "t" is a textual device used here to distinguish these individuals from those directly concerned with the project (cf. "T"). Those nominally responsible for *Reach In - Reach Out,* that is, the Project Director, the School Principal and the ICT Co-Ordinator will be referred to by their position.

1.2 Data Collection Methods and Analysis

The main source of data collection for this study was a series of semi-structured interviews and site observations over a period of six months during 2001. The first interviews and observations took place on site (at Lockhart River State School) in Term 2, 2001 with the second taking place in Term 3 during a seminar of teachers and administrators involved in the project. The final interview for this study was conducted with the Project Director in January 2002. The benefits of

the interview as a research tool lie in its immediacy, its direct interaction permitting clarification or deeper explication of issues raised (Rose, 1991; Van Manen, 1987). The disadvantages lie in its subjectivity and potential for bias.

Analysis of the data was conducted using a framework devised by Engestrom (1987) and referred to as Activity Systems Theory (or more properly, Cultural-Historical Activity Systems). The components of an activity system are subject, rules, instruments, community, division of labour, and object). This structure is shown graphically in Figure 1.

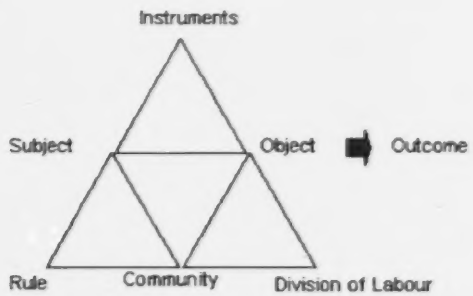

Figure 1: Activity System (after Engestrom, 1987)

To investigate the second research focus, a simple process of data coding and collation took place, producing a narrative description of how online curriculum projects (particularly *Travel* Buddies) had been adapted to meet specific teaching and learning goals in Indigenous education.

1.3 Ethical Issues

Given the potential for cross-cultural misunderstandings and that all interview processes are an invasion of privacy (and inherently an act of trust by the subject), clear guidelines of behaviour and practice were adopted. The methods adopted by this study have received approval from (and undergone interim monitoring by) the QUT University Human Research Ethics Committee. While it remains problematic to conceal the identities of individuals within this research environment given its unique location and the small scale of the sample population, every effort has been

made to achieve subject anonymity. All study informants were shown drafts of the report with feedback sought, and permissions for citation re-negotiated.

1.4 Limitations of the Study

The reported study may be limited by its specificity, that is, its results may be unique to the sample population in the recorded place and time. At the time of study, *Reach In - Reach Out* was a new project conducted on a small-scale with concentrated and committed support of the Principal, Project Director and ICT Co-Ordinator. Ridgway and Passey (1991) suggested that studies with such characteristics were generally based on "evidence gained from small-scale studies conducted under almost ideal circumstances, such as the teaching by enthusiastic experts who have generous resources" (Ridgway & Passey, 1991, p. 4). What becomes problematic is that initiatives supported in this way are often not replicable in other situations where less positive leadership, personal involvement, professional development, collegial support or technical expertise is available.

2. Findings of the Study – Research Focus 1

To investigate the first research focus, data was analysed in terms of the interactions from within the activity system. The findings are presented in this section as (1) Subject – Object – Community (Section 2.1); (2) Subject – Instruments – Object (Section 2.2); (3) Interactions Concerning Rules (Section 2.3) which includes (a) Subject – Rules – Community, (b) Subject – Rules – Object, (c) Subject - Rules - Division of Labour; (d) Object – Rules – Division of Labour, and (e) Instruments – Rules – Objects; (4) Object – Division of Labour – Community (Section 2.4); and (9) Subject – Instruments – Division of Labour (Section 2.5). A summary of the findings is presented in Section 2.6. The word "community" in lowercase (apart from headings) refers to the "community" of the Activity System (here the school). Where "Community" is capitalised in text, it refers to the people of Lockhart River.

2.1. Subject – Object – Community

The *subject – object – community* interaction has been described as being the central process of an activity system (Hang & Wong, 2000). This process permits the subject to define the object

(here the *Reach In - Reach Out* Project) in the context of its community (here the Lockhart River School). It speaks (a) of deeper individual understandings of the role of ICT in education, and of beliefs concerned with teaching and learning itself; and, (ii) of the concerns of teachers in remote Indigenous Communities. Interview subjects were directly asked to define *Reach In - Reach Out*. None of the interview subjects (N=9) offered a simple response, that is, where only one role was offered and a number of subjects (n=4) worked the phrases "reach in" or "reach out" into their definition revealing an immersion in the project's philosophy and conceptual structure. All subjects referred to either the communication (with Lockhart River students at school in other centres) or the curriculum applications (particularly Travel Buddies).

Some interview subjects (n=3) offered more functional definitions referring to the purpose of *Reach In - Reach Out* in preparing Lockhart River students for high school and the consequent departure from the Community. The students reaching back into Lockhart with information about their schools were helping to prepare younger ones to make this transition. A final role was to describe *Reach In - Reach Out* as a learning experience, with two teachers referring specifically to language (as ESL) and literacy. One interview subject (T1) offered that the use of ICT, particularly through the Travel Buddies project simultaneously offered new and traditional literacies. In an earlier informal discussion with the Principal (during a preparatory visit to the school), the Principal spoke of the potential role of ICT in immersing his students in English. For Lockhart River students, their first language may be any one of six local Aboriginal languages

T2's definition was comprehensive of the multiplicity of roles adopted by the project. He defined it as:

> … a program which has started to help the kids who are away from Lockhart River at boarding school. Kids can contact their families - the primary medium is through information technology. It helps people in Lockhart, the parents and other family members, to reach out to the kids who are away from the community.

What is most interesting about the responses within the *subject – object – community* interactions is that they were not technocentric. This was somewhat unexpected given the

dependence of the project on its technologies. The responses defined the project as being about children, their connections with their family and community, and their educational opportunities. The technology was seen as an umbilical cord connecting the children to their homes. It subliminally accepted that technology (ICT) had the power to defeat distance. T1 suggested that this support was critical for the children, supporting their being away "without family ties … is extremely important. Far more important than education. The social perspective is far more powerful."

The *subject – object – community* responses also spoke of the educative power of ICT, particularly as a motivational tool and as a medium for developing skills in literacy. It is also of interest to this study that the pedagogy was not given primacy in the interview subject's definitions. It was almost an unexpected bonus to the implementation of the *Reach In - Reach Out* Project but one which remained positioned as suborrdinate to the social agency brought by the telecommunications to connect absent students with their families.

2.2 Subject – Instruments – Object

The *subject-instruments-object* interaction described individuals' personal competence and confidence in the use of ICT. Because *Reach In - Reach Out* is dependent on computer-mediated technologies, those who participate in it need to be confident users. The Principal saw the *subject-instruments-object* interaction as being essentially outside of the control of the school and its staff. Part of the conceptualisation of the *Reach In - Reach Out* Project was the appointment of the ICT Co-Ordinator to the school and the Principal saw this role as being critical in making the technology a seamless component in the project. To facilitate the *Reach In - Reach Out* Project, Lockhart River school has had a new computer laboratory installed.

The ICT Co-Ordinator accorded the success of the Travel Buddies project to their having overcome what was referred to as "technical hiccups," explained as occurring when "the technology [was] not working, people not knowing how to use the site, not knowing how to do it. But once we got rid of those hiccups - it's starting to work well". This notion of temporary problems was also raised by T1 who spoke (in the past tense) of "barriers" and the initial need "to get on top of the technology itself". This teacher spoke of this as being something that had

been accomplished. The ICT Co-Ordinator also acknowledged, in relation to the web-cam link ups, that:

> … technology wise, at the beginning, we didn't know what we were doing. It has taken this long to get hook ups going and now it's just a matter of trying to get the parents down here so that they can see the kids. Last few hook ups during the evening when the parents were supposed to come down here, the parents didn't turn up.

As before, and consonant with the findings of the *subject – object – community* interaction (Section 2.1), any discussion of technology quickly elided into a consideration of broader personal, educational and motivational goals for students or related logistical and human concerns. There are complexities in the *subject-instruments-object* interaction wrought by situating the project in a remote Indigenous community. The teachers of Lockhart River appeared unconcerned with technological literacy or with the reliability of the machines being used or access to external technical assistance. They were alternately concerned with the specifically social and cultural affects of this interaction on their students and the Community.

2.3. Interactions concerning Rules

There is a whole inventory of legal, industrial and ethical rules governing and constraining the work of teachers irrespective of employer or school location. Teachers in Queensland must comply with the Board of Teacher Registration (BTR) Code of Ethics. As employees of Education Queensland, the subjects in this study were required to attend to duties as directed by the school Principal. The school's Annual Operation Plan (Education Queensland, 2001) explained that "being in the 7B remote area category, teaching staff gain enough transfer points to enable them to be transferred to any district or locality in the State after two years at Lockhart River" (p. 3).

The teachers of Lockhart River, as in other Indigenous Communities, also have an implicit set of socio-cultural rules to follow. The subjects were, without exception, not from Indigenous backgrounds and had all been posted to Lockhart River from outside of the Community. There are Indigenous people working within Lockhart River State School and as

support personnel (particularly teacher aides) and ancillary staff and teaching cultural activities. Teachers, and in fact any other outsiders, are only welcome in Lockhart River on the permission of the Lockhart River Aboriginal Council (LRAC). The Education Council which approved (in 2000) the implementation of the *Reach In - Reach Out* Project is a subset of the LRAC.

The affiliations and associations of the school determining the "rules" which govern Lockhart River School were described in the school's Annual Operation Plan as being:

1. Active participation in the *Partners For Success* Strategy – we are a Trial school in this Strategy. This strategy focuses on Community involvement in the education business through involvement in such areas as curriculum, learning and, most importantly, pedagogy.
2. Active participation in the *Cape York Partnerships* strategy – as evidenced by negotiation of a Compact between the School and Community Council.
3. A Community Focus in our planning and our activities – as evidenced by the strategic role of our Education Council, development of locally based rich task curriculum, a community capacity building program in education and training, and close cooperation with other government Departments.
4. Actualising some of the tools to improve student learning outcomes that are offered by technology. This is expressed in our *Reach In Reach Out* program.

(Education Queensland, 2001, p. 1)

The school is therefore part of broader strategies concerning Indigenous Communities, particularly the *Partners for Success* (Education Queensland, 1999) which recommended Community involvement in the operation of schools. These affiliations situate the school within systemic programs to address social issues and may well explain the primacy of socio-cultural concerns evidenced in the *subject – object – community* interaction (Section 2.1) and the *subject – instruments – object* (Section 2.2) interactions. The school cannot be disassociated (in philosophy or in practice) from its geography or its socio-cultural situation.

Innovations in schools are usually imposed from above and through mandated change - frequently without due preparation, consultation or explanation (Bailey, 2000; Hargreaves,

1991). Projects such as *Reach In - Reach Out* could well have fitted into this profile of the top-down mandated initiative. What was suggested in Lockhart River, although devised in conjunction with the Principal and specifically for its students, was effectively an outside initiative. Teachers were asked to support an untried concept, to change their pedagogy, and to effectively challenge their own understandings of ICT in education, and of Indigenous education itself. Within the *subject – rules – community* interaction, all known rules were changed or dispensed with as the project called for new rules, trust in new people, and an expanded definition of what constituted the school's community (to encompass teachers in the boarding schools attended by the Lockhart River students).

There is a concatenation of the *subject – object – rules* and the *subject – rules – community* interaction because of the integration of the *Reach In - Reach Out* Project within the school curriculum. This is substantiated by the Project's being named in the Annual Operation Plan (Education Queensland, 2001) as being the means to achieve improved student learning outcomes. The "rules" of the Project have effectively become the "rules" of the school– as both an agent of Education Queensland, and the manifestation of Community values and aspirations.

The *subject – rules – division of labour* interaction has to do with what an individual does or is permitted to do as determined by the "roles" of their employment. This has an interrelationship with the *subject – rules – community* interaction in that it may be to do with individual's official position within the school, or with the responsibilities and ethical constraints of just being a teacher. It may alternately be the responsibilities associated with and allocated or assumed role in the project.

One component of *Reach In - Reach Out* which has been problematic is *Family Connections*. One of the "peripheral" teachers, t5 suggested an alteration to the "rules" governing this component by offering that:

> … where we have fallen down the most is in … getting the parents involved. I think the parents are pretty shy. Things that are most successful at the school have had lots of advertising, you go and tell them, and you go and pick them up. For that to happen there has got to be someone who has the time to do it. For it to really work there has got to be

> some flexibility for some teachers, some flexibility in their hours. With the different concept of time like at 7 o'clock we have this connection - they roll up at a quarter past seven and it's all over and another situation happened where they got here a few minutes early and [the ICT Co-Ordinator] had to race home for something and by the time she had got back they'd gone. So if you're late they're gone. It's how it is.

The *object – rules – division of labour* interaction was concerned with the organisation and decision-making of the object, here the *Reach In - Reach Out* Project itself. The situating of the Project in an Indigenous Community brought additional complexity to this interaction. Research has shown that Community families are more likely to take part in school activities in relaxed circumstances and where there is the opportunity to interact with Indigenous staff (Collins, 1993; Godfrey et al., 1999). When asked (in interview) about the possibility of a community member being trained to supervise the computer laboratory out of hours, t5 commented that:

> … you've got a sort of hierarchy in a respect thing in families … if there was someone higher up the ladder who comes down and wants to do something, then … the teacher aide won't feel that they have a right to tell them how to do it or say "No, you can't do that!" or "Yes you can do that!"

The *instruments – rules – object* interaction was concerned with the use of the technology in relation to the object, the *Reach In - Reach Out* Project. As with *object – rules – division of labour* interaction, the "rules" are emerging because of the newness of the implementation, the initial unfamiliarity with the processes involved, and the emerging skills of the participating teachers and students. A further problem offered by t5 was with:

> … the use of the computer room [as a community resource]. … there is a problem with all the rules. On the one hand they are saying "Yeah yeah, we want the community to have access." And then we had the situation where there was going to be free lessons on how to use the Internet and it changed when the builder and the shop keep – the white builder and the white shopkeeper - wanted to access the free lessons. Well it was "No, how's that going to help Lockhart kids away at school", so there's a whole lot of issues.

The "rules" of the Project are developing in response to emergent situations, and a defining of the Project's intent. Decisions will be made and rules will emerge which will clarify what the Project is about, and how best to achieve its aims.

2.4 Object – Division of Labour – Community

The *object –division of labour – community* interaction describes who does what within the community to promote and maintain the object, here the *Reach In - Reach Out* project itself. Interview subjects were asked to describe their own role in the *Reach In - Reach Out* Project and how their role had interacted with others. This provided data to map the roles adopted by individuals and also identified the emergence of collaboration and collegiality within teachers within the school. The Principal was dismissive of his role in *Reach In - Reach Out* and accorded credit to others. Teachers were equally dismissive describing their roles in terms of actions and outcomes. One interpretation of the teacher responses to the *object –division of labour – community* interaction might be that each was operating atomistically within the project without an over-arching sense of ownership or involvement. But this would be simplistic, and patently inaccurate given the richness of responses to the *subject –object –community* interaction (Section 2.1). They saw themselves as doing teacher tasks of planning, implementing, and sharing. What was significant was that there was no reference to a hierarchy or chain of command indicating a measure of teacher autonomy in their ICT adoption and a communal approach to decision-making.

This "sharing" is of particular interest to this study (with relevance to the first of the research foci). T2 described how "when we had finished our rich task [based on the animals of Lockhart River], we invited every class to the room to look at the writing the kids had done. The other kids went to our web site to look at our media gallery". Through this, student outcomes (and the developed learning experiences) was pro-actively shared with the teachers and students of the school. T1 described the interaction within the school by saying that:

> We work independently and glean ideas off other teachers as well. Seeing what sort of things they have done as well that worked or asking them "Did that work?" or "What didn't work?" Or going and telling them that "that was a flaming disaster because I made

this mistake" – that sort of stuff. Most of the close work is with the technology teacher [ICT Co-Ordinator]. So I work with her and say "Which way are we going with the Travel Buddy area?"

The comments from T1 and T2 described interactions which partially meet Little's (1982) description of "collegiality" as being the (a) frequent, continuous and increasingly concrete and precise talk about teaching practice; (b) frequent observations of classroom practice (as noted in T2's overt sharing of student outcomes); (c) planning, designing and evaluating teaching materials together (as noted in T1's comments), and, (d) teaching each other the practice of teaching. T1 and T2 were more involved in *Reach In - Reach Out* than T3 and T4, and thus spoke more expansively of how it had changed their teaching practice, and their interactions with others.

An important consideration in the *object –division of labour – community* interaction is to include the staff of the external schools as part of the "community." The success of projects such as Travel Buddies is highly dependent on the co-operation of the external teacher and the division of labour must include the actions of this teacher in meeting mailing deadlines and in reliably returning the buddy to its home at the appointed time, or in organising families for the *Family Connections* project. T1 identified the necessity of establishing strong collegiate relationships with these external teachers after visiting one of the participating schools. T1 also acknowledged the issue of transience of teachers in remote schools. The participating teacher referred to was transferred, "and then another one came in and they tried to keep it going till the end of the year and then I left." Sustaining collegiate relationships in the midst of transience is an added difficulty in this area.

2.5 Subject – Instruments – Division of Labour

The *subject – instruments – division of labour* interaction was concerned with who takes on which role in the use of the instruments, here referring to the computers themselves within the school. This interaction has both technical and pedagogical components. The technical includes both (a) management of the computers and telecommunications, and (b) the management of web pages used to host the media galleries and other components of the *Reach In - Reach Out* Project.

The pedagogical includes the integration of computers (and usually telecommunications) into the curriculum. At its simplest, the *subject – instruments – division of labour* interaction could be equated to the control of the technology within the school.

At Lockhart River School, the control of technology particularly rests with the ICT Co-Ordinator. She described her role in this interaction by saying that:

> I have …to make sure that everything gets done up here, … making sure the technology is working, making sure things are getting put on the web. I take technology lessons as well - so I see myself as a facilitator. Next year [2002] I will help more with curriculum planning, which is what I really should be doing this year. Sitting down with them [the classroom teachers], helping them write their curriculum plan *around travel buddies,* around the media galleries to get the maximum [from the technologies available].

The ICT Co-Ordinator's description encompasses the full range of what belongs to the *subject – instruments – division of labour* interaction. Other interview subjects (particularly T1, T4, t5 and t6) supported her description through their own commentaries. The findings here vindicate the school's decision to appoint a specialist ICT Co-Ordinator, and that the success of the project is contingent on the presence of someone in this role.

2.6 Summary of findings

This section has dealt in turn with the interactions defined through the components of an activity system (Engestrom, 1987). What emerged was (i) a commitment to students above all else; (ii) a strong sense of collegiality supporting the ICT innovation; and (iii) a willingness to adapt the Project to meet specific needs of its users, namely teachers, students and parents. In *Reach In - Reach Out*, there was an abiding focus on the "outcome" and not, as expected, the technology. This can be seen to be a by-product of (i) the technology itself being robust, reliable and user-friendly; and, (ii) the holistic and collaborative approach taken by the Project Director in her initial representations of the Project to the teaching staff. Much of this collegiality and commonality of purpose must be seen to stem from the respect in which the Principal, the co-designer of the Project, is held. All teachers interviewed had ideas as to how to maintain, sustain and improve the conduct of the Project particularly in regard to working relationships with the

partner schools and with the Community of Lockhart River. The practicality, pragmatism and pro-active nature of their comments speak of the sense of ownership and autonomy evident in the school.

3. Findings of the Study – Research Focus 2

The second research focus of this study was the adaptation of online curriculum projects within an Indigenous context. The project used was Travel Buddies, which is conducted and managed by the RITE Group and accessed through the Oz Teacher-Net. While the educational value of online curriculum projects such as Travel Buddies has not been proven empirically, there is sufficient anecdotal evidence and positive practitioner reports extant to warrant their inclusion in the school curriculum. The concept behind Travel Buddies is simple. Classes exchange a "buddy," usually a soft toy or puppet. Students may take turns to look after the buddy and classes keep in touch through email or web postings, as well as collating a diary or scrapbook (which is usually returned with the buddy). Travel Buddies represents a shifting of a simple exchange activity into a computer-mediated environment. Its success may be due to its simplicity; in that the obverse of this, or "perceived complexity" is a barrier to success (Fullan & Pomfret, 1977). The mediation of ICT has brought an immediacy and ease of access not previously possible. Pen-pal or other exchanges have been hindered by the need to wait for responses, thus fragmenting interactions between participating class groups. Although Travel Buddies was renamed "Lockhart Buddies" (Section 3.1) under the umbrella of the *Reach In - Reach Out* Project, subjects interviewed for this study continued to use the term "travel buddies". The following section will describe the "Lockhart Buddies" (Section 3.1) and then present an analysis of how this project has been adapted to an Indigenous context (Section 3.2).

3.1 Lockhart Buddies

At time of writing, there were 11 "Lockhart Buddies" - toys or backpacks which have been given names and personalities by the students at Lockhart River. Some Lockhart Buddies fit the model of Travel Buddies. They "travel" to the boarding schools attended by Lockhart River students with a specific mission or question to answer. Lockhart River also has non-travelling buddies and this is the most apparent adaptation of Travel Buddies to the context of Indigenous education. Because the Lockhart Buddies Project is effectively a whole-school activity with the

aim of preparing students to go to boarding school there are also buddies who are also preparing to go away. The buddies are empathetic "others" who have come to share the children's lives.

The Lockhart Buddies Project was to be (along with the Media Galleries) the way that *Reach In - Reach Out* was to be implemented within the curriculum at Lockhart River State School. The initial curriculum implementation was planned between one of the teachers (T4), the Principal, Project Director, and the ICT Co-Ordinator.

All "Buddies" projects are reliant on their success on third parties and this proved to be no exception to this rule. T4 was disappointed by how little had been entered in the diaries of the first four buddies, but had felt that her students had gained from the experience. She travelled to Peace Lutheran College with some of the Level 4 students to visit the school and reclaim their buddies. The issues T1 faced with partner teachers being transferred and the need to repeatedly re-establish working relations with others have been discussed in Section 2.4. The teachers of Lockhart River were seemingly not deterred by setbacks and adopted pragmatic strategies to cope with problems as they arose. In interviews, both T1 and T4 outlined plans as to how they would avoid problems in future iterations of the project. T4, who left Lockhart River at the end of 2001, (at the end of a two-year posting) intended to co-ordinate further Travel Buddies projects. The project gained momentum when T1 became involved with a *Timmy the Bear* exchange, and saw at first hand its motivational impacts on student participation in general (Section 2.1), and in particular on their language experiences (referred to earlier in this section).

3.2 Project Adaptation

The adaptations of Travel Buddies are greater than a superficial change in name to Lockhart Buddies. The adaptations have been imposed as pragmatic responses to the circumstances of student needs at Lockhart River State School. The changes are significant and may be summarised as (i) a whole-of-school approach; (ii) the commonality of purpose for the *buddies* to aid in the transition of students to living away at boarding school; (iii) the increased, and in some cases, sole use of web publishing as the means of communication between the "home" and "host" schools; (iv) the notion of travelling and non-travelling *buddies* with the *buddy* acting in

both cases as an empathetic "other" which students identify with and treat as a peer; (v) the emphasis on literacy (including ESL approaches) and numeracy in related activities; and, (vi) the use of the *buddies* as a link to the Community. The following text provides an annotated discussion of these identified adaptations. It is necessarily a temporary set of changes as the project is still under development, and evolving and developing over time.

i) A whole-of-school approach

In most instances of online curriculum projects, the co-ordination is of one *buddy* in one exchange and concerning one teacher and class grouping. At Lockhart River, every class and every teacher were involved with one or more buddies. This had ramifications for the level of involvement, and inherently for the intensity of collegial interactions (concerning the project) within the school.

ii) The commonality of purpose for the *buddies* to aid in the transition of students to living away at boarding school

What was constant in the findings (as presented in Section 2) was an abiding personal concern for the welfare and future prospects of the students of Lockhart River. The entire premise of *Reach In - Reach Out* is supporting students' continued attendance at school, with the view of their completing their secondary school education. *Reach In - Reach Out* was seen as a strategy which may help to achieve this goal. In her interview, T1 offered that the real lesson from a travel buddy exchange was:

> ... the important social stuff, like how should Timmy behave when he goes to another school. Should he be good at school? Should he write to his mother? All those sort of social things as well which the kids will see hopefully and say "When I go - Timmy did that - it is the right thing to do".

The simple equation was that personal unhappiness and a sense of isolation were largely responsible for the Lockhart River students not completing secondary school. Staying at school required the amelioration of this unhappiness and isolation. That education could provide part of the solution to the current inequities of Indigenous life in Australia is a commonly held belief

and appears frequently in published discussion and public forums (Boston, 1999; Gray, Scott, Ah Chee & Wyatt, 1999; Hudspith & Williams, 1994; State of Queensland, 2001).

iii) the increased, and in some cases, sole use of web publishing as the means of communication between the "home" and "host" schools;

An integral feature of *Reach In - Reach Out* is the technology itself. That there was so little reference to the technology in teacher interviews indicates its effectiveness, functionality and fitness for purpose. The project makes use of a sophisticated database-driven web page which exceptional ease of use. Through simple password-protected processes of uploading text and images (as thumbnail or compressed files), entries are made directly to the *Reach In - Reach Out* website. Both sender and audience "see" the entries immediately. The ease of use (from the point of view of the end user) makes working directly in the electronic media perhaps preferable to the more time-consuming and labour-intensive processes of building scrapbooks and diaries manually, or using traditional photography rather than digital processes. The appeal of the electronic diaries (over the traditional or pen and paper alternatives) may be (i) the nature of the buddy's "missions" which focussed on specific authentic tasks (related to life at boarding school and the activities at secondary school); (ii) the restricted literacy (and willingness to write) of the students concerned; and, (iii) the positive affirmation brought by publication of students' words and images.

It is relevant to note that the preferred environment for Indigenous students include (i) a safe and predictable environment (Malin, 1998); (b) the relationship of home/community to school experiences (Collins, 1993; Commonwealth of Australia, 1991); (c) positive affiliative relationships with students (Hudspith & Williams, 1994); (d) positive relationships between students (Fanshawe, 1978, 1989, 1999; Munns, 1998), and (e) congruence of student/teacher goals and recognition of achievement (Bourke, 1999; Gollnick & Chin, 1998; National Aboriginal Studies & Torres Strait Islander Studies Project, 1995). The technology provided by the Lockhart Buddies online diary supports these goals.

iv) the notion of travelling and non-travelling buddies with the buddy acting in both cases as an empathetic "other" which students identify with and treat as a peer;

Both "travelling" and "non-travelling" buddies engendered affection and empathy. Collins (1993) noted the "person orientation" of Aboriginal students and it is arguably this need for rapport in the learning process which makes the empathetic identification with the buddy such a potentially powerful component in the learning outcomes of a Lockhart Buddy project.

The "non-travelling" buddy was the particular innovation of T2 developed to meet the needs of the younger students. This may indicate (i) a personal and professional innovation grounded in teacher ethics, responsibility, personal integrity and commitment; (ii) a growing "ownership" of the project by the teachers within the school indicating a competence and confidence in the approaches and operations of the innovation; and/or (iii) the flexibility of leadership and mentoring from those responsible for the administration of the *Reach In - Reach Out* Project. The non-travelling buddy "lived" at school under the pretext that "he" (a Winnie-the-Pooh backpack called Junior) was too young to go away to boarding school. He alternately came to school each day and took part in the class activities.

While existing Travel Buddies Projects are not prescriptive in how they are to be conducted or what student outcomes will be achieved, they have, over time, become formulaic in the processes to be followed. That instructions are given from an external source may validate these instructions, and act to constrain how participating teachers may act within the conduct of the Project. T2's innovation may well be due to the small-scale of the *Reach In - Reach Out* Project, and the prevalent sense of improvisation within a culture of innovation.

v) the emphasis on literacy (including ESL approaches) and numeracy in related activities;

The interview responses from T1, T2 and T4 indicated that the curriculum activities associated with Lockhart Buddies were primarily concerned with literacy. T3 commented that "we used the travel buddies to take away and learn about numbers and my kids were really excited about that." Numeracy applications were also attempted with other travel buddy exchanges. The literature concerning Indigenous education reiterates the need for improved literacy (in Standard Australian English) to improve the educational and employment opportunities for Indigenous students. Literacy is a critical skill for individuals in the daily conduct of life and poor literacy

skills have adversely affected Indigenous Australians through reducing their access to support systems. The school's Annual Operational Plan states that "the emphasis in all subjects is literacy" and the first session of each school day is directed at literacy and numeracy activities (Education Queensland, 2001, p. 5).

vi) the use of the *buddies* as a link to the Community

There is an identified need to involve Community members in the life and decision-making of the school but this group of people remains apparently reluctant to do so (State of Queensland, 2001). The research suggests that "informal gatherings" are preferred, as is the opportunity to speak to Indigenous members of staff (Hargreaves, 1999). The use of the buddies as the means to "connect" with the Community is relatively new, and remains untested (at time of writing).

There was the sense extant at the school that they were part of something innovative. T4 commented that "because this was something that was new to them as well [the Principal, ICT Co-Ordinator and Project Director]. We were feeling our way around it." What remains apparent in this analysis is the direction and expertise of the Project Director who has brought a rare combination of leadership, vision, empathy, an understanding of pedagogy and deep technological knowledge to the task of operationalising the *Reach In - Reach Out* Project.

4. Conclusion

The study described in this report had the specific aim of regarding the perspective of teachers at Lockhart River State School and considering the impact on them and their interactions during an ICT implementation.

Since the conduct of the study described in this report, two events of note have occurred. The first is the positive reference made to the *Reach In - Reach Out* Project in the Cape York Justice Study and its recommendation to "develop, trial and evaluate strategies to support primary students accessing secondary education outside of their home communities including … models built upon the successful *Reach In – Reach Out* program" (State of Queensland, 2001, p. 65). The beginning of a new school year (2002) has seen the inevitable change of teaching staff at Lockhart River with two of the four teachers cited as key participants in the study leaving the

school. Teachers and students may now progress from a base of experience. The new school year (2002) has also seen the move to boarding schools of the first Lockhart River students who have been at the "home" end of the *Reach In - Reach Out* and *Lockhart Buddies* activities. How this may affect their participation in the continuing activities of the Project is conjectural. Similarly how successful their preparation for secondary school (and the role played in that by *Reach In - Reach Out*) is also conjectural.

The research foci of this study were (i) an investigation of teacher adoption of ICT; (ii) a consideration of the benefits of ICT in the curriculum; and (iii) a testing of Activity Systems Theory as a framework for analysis in ICT environments. The following text will briefly present the response to these foci.

i) Investigation of teacher adoption of ICT

The study has considered teacher change (based on the Stages of Concern (Hall & Hord, 1987) and the ACOT schema (Sandholtz, Ringstaff, & Dwyer, 1992)). The emotional and curricular support required for change emanated from the Principal, ICT Co-Ordinator and Project Director, and more importantly from within the collegiate relationships within the school. The *Reach In - Reach Out* Project included the appointment of a dedicated ICT Co-Ordinator in the school and this appointment has been critical in the success of the Project, particularly in its allowing classroom teachers to focus on curriculum applications as opposed to the additional burden of establishing and maintaining the technical infrastructure of the Project. For the teachers, the Project has been about students and learning, and not about machines or data communications.

Reach In - Reach Out inadvertently adopted Nicholls' (1983) problem-solving model of educational innovation; a model which draws on an external source, a "change agent" who collaborates on rather than directs activities. The "change agent" here is the Project Director, who, while not based in Lockhart River collaborates with teachers through face-to-face visits, teleconferences, email and web communication. She and the Principal conceptualised the *Reach In - Reach Out* Project and it was she who operationalised it. Both must be seen as "change agents" in Reach *In - Reach Out.* To relegate *Reach In -*

Reach Out to a curriculum "extra" would make it fail – to make it a whole-school project gave it a chance to be meaningful for students, teachers and the Community. This represents a real instance of ICT restructuring schooling, and of affirmative action being taken on behalf of Indigenous students.

ii) Consideration of the benefits of ICT in the curriculum

There is a dearth of research in the actual benefits of ICT in the curriculum. The literature is based on anecdotal evidence and the observations of practitioners. Because of the focus of this study, any findings here relevant to the benefits of ICT in the curriculum must also be considered as conjectural. The short duration of the ICT implementation would also limit the validity and reliability of claims from this study.

The interview responses detailed in Section 2.1 relate to teacher observation of the motivational impact of *Reach In - Reach Out* activities, specifically in language (as ESL) and literacy. T2 supported this in his observation that the students "want to write about Junior." An emergent benefit of ICT is the power it gives individuals to create resources and to tailor learning experiences to specific situations. The greatest benefit to curriculum outcomes in an Indigenous context would be to increase student motivation as measured by attendance, participation and retention. The word "excitement" was noted in interviews with T1 and the Project Director in describing student responses to Lockhart Buddy activities. "Excitement" is a positive outcome when measured against existing commentaries of Indigenous students experiences of schooling.

iii) Testing of Activity Systems Theory as a framework for analysis in ICT environments.

The adoption by this study of Activity Systems (Engestrom, 1987) was informed by the work of Romeo and Walker (2001) in their investigation of the interactions within a technology-rich school in Victoria. It is believed that Activity System Theory has real potential in describing and analysing the dynamic environment of the technology-using school. Outcomes can be shared between activity systems, indicating the potential for parallel comparative studies.

The conclusion of this study is that Activity System Theory is well suited to the analysis of technology-rich environments. ICT has the propensity to change "everything" in a learning environment and Activity Systems Theory offers a framework to comprehensively account for all components of the environment in change.

The *Reach In - Reach Out* Project must be deemed a success by the measures of this study. It has "reached" those it has intended to reach, and has changed the learning environment of the school from low-tech to high-tech. The study described in this report is seen very much as a beginning. It concludes with a positive view of the beginnings made, and can find much to praise in terms of the Project's student-centred focus, the democracy of its decision-making, the inclusivity of its practices, and its willingness to evolve and adapt to meet the needs of those whose lives it affects. The greatest challenge for the Project is sustenance in the face of staff changes and a possible dilution of focus (through more general dissemination). The Project needs to adopt internal audit processes to keep it in touch with its original goals. It also needs to take heed of local Community needs and aspirations, and consult with Community members to develop strategies to make the *Family Connections* more successful. Strategies also need to be developed to inform partner schools of the project's directions, and to maintain their involvement and participation. For those outside of Lockhart River, the needs of its children may not have the same primacy of need. The motto of the project could be a phrase from T1's comment, where she offered that *Reach In - Reach Out* was "far more important than education."

References

Bailey, B. (2000). The impact of mandated change on teachers. In N. Bascia & A. Hargreaves (Eds.), *The sharp edge of educational change* (pp. 112-128). London: Routledge Falmer.

Boston, K. (1999). Community participation and leadership. *Unicorn, 25*(3), 31-38.

Bourke, C. (1999). A response to the panel on literacy, numeracy, attendance and health. *Unicorn, 25*(3), 20-30.

Collins, G. (1993). Meeting the needs of Aboriginal students. *The Aboriginal Child at School, 21*(2), 3-16.

Commonwealth of Australia. (1991). Report of the Royal Commission into Aboriginal deaths in custody. Canberra: AGPS.

Education Queensland (1999). *Partners for Success.* Brisbane: State Government of Queensland.

Education Queensland (2001). The 2001 Annual Operational Plan for Lockhart River State School. Unpublished report, Lockhart River State School.

Engestrom, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research.* Helsinki: Orieta-Konsultit.

Fanshawe, J. (1976). Possible characteristics of an effective teacher of adolescent Aboriginals. *The Aboriginal Child at school, 4*(2), pp. 3-23.

Fanshawe, J. (1978). An investigation of some of the characteristics of effective teachers of adolescent Aboriginals. Unpublished masters thesis. University of Queensland, Brisbane.

Fanshawe, J. (1989). Personal characteristics of effective teachers of adolescent Aboriginals (Research Report). *The Aboriginal Child at School, 17*(4), 35-38.

Fanshawe, J. (1999). Warmth, demandingness, and what else? A reassessment of what it takes to be an effective teacher of Aboriginal and Torres Strait Island children. *Australian Journal of Indigenous Education, 27*(2), 41-46.

Fullan, M., & Pomfret, A. (1977). Research on curriculum and instructional implementation. *Review of Educational Research, 47* (1), 335-397.

Godfrey, J., Harrison, B., Harslett, M., Partington, G., Richer, K., Wyatt, K., & Brahim, N. (1999). Quality schools for aboriginal students research project: Final report [Web document]. Available: http://www.wn.com.au/abled/quality/finalrep.htm [2002, March 8].

Gollnick, D., & Chinn, P. (1998) *Multicultural education in a pluralistic society.* Upper Saddle River, NJ.: Prentice-Hall.

Gray, B., Scott, D., Ah Chee, D., & Wyatt, K. (1999). Literacy, numeracy, attendance and health. *Unicorn, 25*(3), 17-18.

Hargreaves, A. (1991). Contrived collegiality: The micropolitics of teacher collaboration. In J. Blasé (Ed.), *The politics of life in schools*. Thousand Oaks, CA.: Corwin Press.

Hargreaves, A. (1999). Fielding errors? Deepening the debate about teacher collaboration and collegiality: Response to Fielding. *Australian Educational Researcher, 26*(2), 45-53.

Hall, G. & Hord, S. (1987). *Change in schools : facilitating the process.* Albany, N.Y. : State University of New York Press.

Hang, D., & Wong, A. (2000). Activity theory as a framework for project work in learning environments. *Educational Technology,* March-April, 33-37.

Hudspith, S., & Williams, A. (1994). Enhancing Aboriginal identity and self-esteem in the classroom. In S. Harris, & M. Malin (Eds.), *Aboriginal kids in urban classrooms.* . Wentworth Falls, N.S.W.: Social Science Press.

Little, J.W. (1982). Norms of collegiality and experimentation: Workplace conditions of school success. *American Educational Research Journal, 19*(3), 325-340.

Malin, M. (1998). They listen and they've got respect: Culture and pedagogy. In G. Partington (Ed.), *Perspectives on Aboriginal and Torres Strait Islander education* (pp. 245-273). Australia: Social Science Press.

Munns, G. (1998). They just can't hack that: Aboriginal students, their teachers and responses to schools and classrooms (pp. 171-187). In G. Partington (Ed.), *Perspectives on Aboriginal and Torres Strait Islander Education.* Australia: Social Science Press.

National Aboriginal Studies and Torres Strait Islander Studies Project (1995). *National principles and guidelines for Aboriginal studies and Torres Strait Islander studies K-12.* Carlton, Vic.: Curriculum Corporation.

Nicholls, A. (1983). *Managing educational innovations.* London: Allen & Unwin.

Ridgway, J., & Passey, D. (1991). A constructivist approach to educational computing. *Australian Educational Computing, 6*(2), 4- 9.

Romeo, G., & Walker, I. (2001). Using Activity Theory to investigate the implementation of ICTE in a primary school. Paper presented at WCCE2001, Copenhagen, August 2001.

Rose, H. (1991). Case studies. In G. Allan, & C. Skinner (Eds.), *Handbook for research students in the social sciences* (pp. 190-202). London: Falmer Press.

Sandholtz, J., Ringstaff, C., & Dwyer, D. (1992). The relationship between technological innovation and collegial interaction [ACOT Report 13]. Cupertino, CA.: Apple.

State of Queensland (2001a). Education for life [Web document]. Available: http://www.treasury.qld.gov.au [2001, 31 December].

University of Finland (2001). *Center for activity theory and developmental work research* [Web document]. Available: http://www.edu.helsinki.fi/activity [2001, September 28].

Von Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy.* New York: University of New York.

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC REPRODUCTION RELEASE

I. Document Identification:

Title: A community of teachers: Using Activity Theory to investigate the implementation of ICTE in a remote Indigenous school.

Author: Margaret Lloyd & ~~Rebecca~~ Rebecca Gronin

Corporate Source: AARE

Publication Date: 2002

II. Reproduction Release:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please check one of the following three options and sign the release form.

✓ Level 1 - Permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g. electronic) and paper copy.

___ Level 2A - Permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only.

___ Level 2B - Permitting reproduction and dissemination in microfiche only.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but no option is marked, documents will be processed at Level 1.

Sign Here: "I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Signature: M. M. Lloyd
Position: Lecturer (Computer Education)
Printed Name: MARGARET LLOYD
Organization: Queensland University of Technology
Address: School of Maths, Science + Technology Education, QUT Victoria Park Road, KELVIN GROVE, Q. 4059 AUSTRALIA
Telephone No: 61 07 38643326
Date: 22.02.03

III. Document Availability Information (from Non-ERIC Source):

RC023890

If permission to reproduce is not granted to ERIC, or, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:

Address:

Price per copy: Quantity price:

IV. Referral of ERIC to Copyright/Reproduction Rights Holder:

If the right to grant this reproduction release is held by someone other than the addressee, please complete the following:

Name:

Address:

V. Attach this form to the document being submitted and send both to:

Velma Mitchell, Acquisitions Coordinator
ERIC Clearinghouse on Rural Education and Small Schools
P.O. Box 1348
1031 Quarrier Street
Charleston, WV 25325-1348

Phone and electronic mail numbers:

800-624-9120 (Clearinghouse toll-free number)
304-347-0467 (Clearinghouse FAX number)
mitchelv@ael.org